UNITED STATES PATENT AND TRADEMARK OFFICE

APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/086,696	03/04/2002	Fumirou Abe	0826.1801	2816

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EXAMINER
DODDS. HAROLD E

ART UNIT	PAPER NUMBER
2167	

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Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary	**Application No.** 10/086,696	**Applicant(s)** ABE ET AL.	
	Examiner Harold E. Dodds, Jr.	**Art Unit** 2167	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE _3_ MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.
- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

1)☒ Responsive to communication(s) filed on _04 March 2002_.

2a)☐ This action is **FINAL**.   2b)☒ This action is non-final.

3)☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

4)☒ Claim(s) _1-13_ is/are pending in the application.

    4a) Of the above claim(s) _____ is/are withdrawn from consideration.

5)☐ Claim(s) _____ is/are allowed.

6)☒ Claim(s) _1-13_ is/are rejected.

7)☐ Claim(s) _____ is/are objected to.

8)☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

9)☐ The specification is objected to by the Examiner.

10)☒ The drawing(s) filed on _04 March 2002_ is/are: a)☒ accepted or b)☐ objected to by the Examiner.

    Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).

    Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).

11)☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

12)☒ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).

    a)☒ All b)☐ Some * c)☐ None of:

      1.☒ Certified copies of the priority documents have been received.

      2.☐ Certified copies of the priority documents have been received in Application No. _____.

      3.☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

    * See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

1) ☒ Notice of References Cited (PTO-892)
2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
3) ☐ Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08) Paper No(s)/Mail Date _____.

4) ☐ Interview Summary (PTO-413) Paper No(s)/Mail Date. _____ .
5) ☐ Notice of Informal Patent Application (PTO-152)
6) ☐ Other: _____.

DETAILED ACTION

Claim Rejections - 35 USC § 103

1.   The following is a quotation of 35 U.S.C. 103(a) which forms the basis for

all obviousness rejections set forth in this Office action:

> (a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negatived by the manner in which the invention was made.

This application currently names joint inventors. In considering patentability of

the claims under 35 U.S.C. 103(a), the examiner presumes that the subject matter of

the various claims was commonly owned at the time any inventions covered therein

were made absent any evidence to the contrary. Applicant is advised of the obligation

under 37 CFR 1.56 to point out the inventor and invention dates of each claim that was

not commonly owned at the time a later invention was made in order for the examiner to

consider the applicability of 35 U.S.C. 103(c) and potential 35 U.S.C. 102(e), (f) or (g)

prior art under 35 U.S.C. 103(a).

2.   Claims 1-5, 10, and 13 are rejected under 35 U.S.C. 103(a) as being

unpatentable over Shimura et al. (U.S. Patent No. 5,138,669) and Burkhard (U.S.

Patent No. 5,924,091).

3.   Shimura renders obvious independent claims 1-3 and 13 by the following:

"...an automaton generating step of generating an automaton..." at col. 7, lines 45-50.

"...for receiving a character string..." at col. 7, lines 21-35.

"...with a final transition state..." at col. 15, lines 52-64.

"...by scanning the automaton..." at col. 3, lines 66-68 and col. 4, lines 1-6.

Shimura doe not teach the use of sort keys, record identifiers, order value tuples, and arranging records in either ascending or descending order.

4.   However, Burkhard teaches the use of sort keys, record identifiers, order value tuples, and arranging records in either ascending or descending order as follows:

"...of a sort key item of each record..." at col. 9, line 50-55 and col. 7, lines 58-59.

"...and for associating a record identifier..." at col. 7, lines 58-59.

"...and an order value tuple generating step of generating an order value tuple..." at col. 35, lines 12-14, col. 7, lines 54-57, and col. 7, lines 20-22.

"...which is a set of a record identifier of the record..." at col. 7, lines 54-57.

"...and an order value which is obtained by arranging the records in an ascending/ descending order..." at col. 7, lines 54-57 and col. 9, lines 50-55.

It would have been obvious to one of ordinary skill at the time of the invention to combine Burkhard with Shimura to provide sort keys and record identifiers in order to allow the keys of records to be sorted and to minimize the number of record reads for each record. Likewise, it would have been obvious to one of ordinary skill at the time of the invention to combine Burkhard with Shimura to provide order value tuples in order to provide increased flexibility in the definition of sort keys. Finally, it would have been obvious to one of ordinary skill at the time of the invention to combine Burkhard with Shimura to allow arranging records in either ascending or descending order in order to provide flexibility in the definition for sequential ordering of records and gain more user acceptability of the system. Shimura and Burkhard teach the use of related systems. They teach the use of computers, the sorting of data, the use of character strings, and

the use of keys. Shimura provides generating automatons for receiving character strings

and Burkhard provides sort keys, record identifiers, order value tuples, and arranging

records in either ascending or descending order.

5.   As per claim 4, the "...computer-readable storage medium storing the

program...," is taught by Shimura in Fig. 71.

6.   As pe claim 5, the "...are a plurality of sort key items...," is taught by

Burkhard at col. 9, lines 50-55,

the "...and said order value tuple...," is taught by Burkhard at col. 7, lines 54-57 and col.

7, lines 20-22,

and the "...is a set of a plurality of order values and a record identifier...," is taught by

Burkhard at col. 7, lines 54-59.

7.   As per claim 10, the "...record identifier setting step of recording a

tuple...," is taught by Burkhard at col. 7, lines 58-59 and col. 7, lines 20-22,

the "...for association between a starting address of a record...," is taught by Burkhard

at col. 24, lines 12-27 and col. 7, lines 58-59,

the "...and a record identifier for identification of the record...," is taught by Burkhard at

col. 7, lines 58-59,

the "...for each record read...," is taught by Burkhard at col. 7, lines 46-49,

and the "...from input data...," is taught by Shimura at col. 4, lines 18-22.

8.   Claims 6-8 and 12 are rejected under 35 U.S.C. 103(a) as being

unpatentable over Shimura and Burkhard as applied to claims above, and further in

view of Lee et al. (U.S. Patent No. 5,148,541).

As per claims 6 and 12, the "...on which the order value tuples...," is taught by

Burkhart at col. 7, lines 54-57 and col. Col. 7, lines 20-22,

but the "...sort table generating step of generating a sort table...,"

and the "...are arranged in a predetermined order...," are not taught by either Shimura

or Burkhard.

However Lee teaches the use of sort tables and a predetermined order as

follows:

"...FIG. 1B depicts one sort encoding table 24..." at col. 8, line
38.

"...The predetermined criteria includes a master alphabetical sort
order for all the languages supported by a multilingual
character set and used in the database..." at col. 6, lines 13-16.

It would have been obvious to one of ordinary skill at the time of the invention to

combine Lee with Shimura and Burkhard to provide sort tables in order to provide for a

table look-up capability and expedite the access to the records. Likewise, it would have

been obvious to one of ordinary skill at the time of the invention to combine Lee with

Shimura and Burkhard to provide a predetermined order of the values in the tables in

order to provide increased flexibility in the definition of sort keys. Shimura, Burkhard,

and Lee teach the use of related systems. They teach the use of computers, the sorting

of data, the use of character strings, and the use of keys and Burkhard and Lee teach

the use of databases and records. Shimura provides generating automatons for

receiving character strings, Burkhard provides sort keys, record identifiers, order value

tuples, and arranging records in either ascending or descending order, and Lee

provides sort tables and predetermined orders of values in tables.

9.   As per claim 7, the "…in said sort table generating step…," is taught by

Lee at col. 8, line 38 and col. 10, lines 29-30,

the "…sort order sort table…," is taught by Lee at col. 5, lines 61-64 and col. 8, line 38,

and the "…on which order values are arranged in an ascending or descending order is

generated…," is taught by Burkhard at col. 7, lines 54-57 and col. 9, lines 50-55.

10.   As per claim 8, the "…in said sort table generating step…," is taught by

Lee at col. 8, line 38 and col. 10, lines 29-30,

the "…record order…," is taught by Burkhard at col. 7, lines 54-57,

the "…sort table…," is taught by Lee at col. 8, line 38,

and the "…on which record identifiers are arranged in an ascending or descending

order is generated…," is taught by Burkhard at col. 7, lines 58-59 and col. 9, lines 50-

55.

11.   Claim 9 is rejected under 35 U.S.C. 103(a) as being unpatentable over

Shimura, Burkhard, and Lee as applied to claim 8 above, and further in view of

Amundsen (U.S. Patent No. 6,745,173).

As per claim 9, the "…there are a plurality of sort key items…," is taught by

Burkhard at col. 9, lines 50-55,

the "…and a record order…," is taught by Burkhard at col. 7, lines 54-57,

the "…sort table…," is taught by Lee at col. 8, line 38,

the "…is generated based on a plurality of order value tuples…," is taught by Burkhard

at col. 7, lines 54-57 and col. 7, lines 20-22,

the "...which is a set of a plurality of order values...," is taught by Burkhard at col. 7,

lines 54-57,

the "...and a record identifier...," is taught by Burkhard at col. 7, lines 58-59,

the "...automaton generating step of generating an automaton...," is taught by Shimura

at col. 7, lines 45-50,

the "...for assuming that a row of a plurality of order values...," is taught by Burkhard at

col. 7, lines 20-22 and col. 7, lines 54-57,

the "...of the record order...," is taught by Burkhard at col. 7, lines 54-57,

the "...sort table...," is taught by Lee at col. 8, line 38,

the "...is a character string...," is taught by Shimura at col. 7, lines 21-35,

the "...belonging to the record identifier...," is taught by Burkhard at col. 7, lines 58-59,

the "...and receiving the character string...," is taught by Shimura at col. 7, lines 21-35,

the "...as a plural order value...," is taught by Burkhard at col. 7, lines 54-57,

the "...key character string...," is taught by Shimura at col. 44, lines 63-66 and col. 7,

lines 21-35,

the "...for all tuples on the record order...," is taught by Burnhard at col. 7, lines 20-22

and col. 7, lines 54-57,

the "...sort table...," is taught by Lee at col. 8, line 38,

the "...of scanning the automaton...," is taught by Shimura at col. 3, lines 66-68 and col.

4, lines 1-6,

the "...which is a set of the record-identifier...," is taught by Burkhard at col. 7, lines 58-

59,

the "...for the plurality of sort keys...," is taught by Burkhard at col. 9, lines 50-55,

but the "...and a general order value tuple generating step...,"

the "...and generating a general order value tuple...,"

and the "...and a newly ordered general order value as a general order...," are not

taught by either Shimura, Burkhard, or Lee.

However, Amundsen teaches the use of general (or common) order tuples as

follows:

"...In the context of two order 1 tensors T1, this would be a
complete description of the steps for computing a join_fanout
were the tensors to have the same domains along their common
order and have along that order, the same ordering of
coordinates..." at col. 26, lines 15-19.

"...The UNION ALL operation operates upon two relations, and
produces a relation having all tuples found in either relation,
whether or not unique..." at col. 29, lines 24-26.

It would have been obvious to one of ordinary skill at the time of the invention to

combine Amundsen with Shimura, Burkhard, and Lee to provide general order value

tuples in order to provide for a universal sequential ordering of the records. Shimura,

Burkhard, Lee, and Amundsen teach the use of related systems. They teach the use of

computers, the sorting of data, the use of character strings, and the use of keys and

Burkhard, Lee, and Amundsen teach the use of databases and records. Shimura

provides generating automatons for receiving character strings, Burkhard provides sort

keys, record identifiers, order value tuples, and arranging records in either ascending or

descending order, Lee provides sort tables and predetermined orders of values in

tables, and Amundsen provides common order value tuples.

12.   Claim 11 is rejected under 35 U.S.C. 103(a) as being unpatentable over

Shimura and Burkhard as applied to claim 1 above, and further in view of Lepage et al.

(U.S. Patent No. 6,009,424).

As per claim 11, the "...of converting input sort key item data...," is taught by

burkhard at col. 6, lines 23-25 and col. 9, lines 50-53,

the "...into a key character string...," is taught by Shimura at col. 44, lines 63-66 and

col. 7, lines 21-35,

the "...appropriate for said automaton generating step...," is taught by Shimura at col. 7,

lines 45-50,

the "...according to a key condition relating to a sort method...," is taught by Burkhard at

col. 7, lines 36-39 and col. 7, lines 66-67,

the "...for each specified sort key item...," is taught by burkhard at col. 9, lines 50-55,

but the "...a key data preprocessing step...," is not taught by either Shimura or

Burkhard.

However, Lepage teaches the use preprocessing steps as follows:

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"...FIGS. 2A, 2B, 2C and 2D are diagrams showing examples of
tables that are formed by the preprocessing section 2 in
connection with a search key "abcad" and stored in the unit
position correspondence memory 10 in the similarity search
apparatus shown in FIG. 1..." at col. 6, lines 19-24.
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It would have been obvious to one of ordinary skill at the time of the invention to

combine Lepage with Shimura and Burkhard to provide a key data preprocessing step

in order to provide for converting the sort key character string into a standard format and

expidating the sort process. Shimura, Burkhard, and Lepage teach the use of related

systems. They teach the use of computers, the use of character strings, and the use of

keys and Burkhard and Lepage teach the use of databases and records. Shimura

provides generating automatons for receiving character strings, Burkhard provides sort

keys, record identifiers, order value tuples, and arranging records in either ascending or

descending order, and LePage provides preprocessing steps on records.

Conclusion

13.   Any inquiry concerning this communication or earlier communications from

the examiner should be directed to Harold E. Dodds, Jr. whose telephone number is

(571)-272-4110. The examiner can normally be reached on Monday - Friday 8:00 -

4:30.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's

supervisor, John E. Breene can be reached on (571)-272-4107. The fax phone number

for the organization where this application or proceeding is assigned is 703-872-9306.

Information regarding the status of an application may be obtained from the

Patent Application Information Retrieval (PAIR) system. Status information for

published applications may be obtained from either Private PAIR or Public PAIR.

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you have questions on access to the Private PAIR system, contact the Electronic

Business Center (EBC) at 866-217-9197 (toll-free).

Harold E. Dodds, Jr.
Patent Examiner
November 9, 2004